

CLIPPEDIMAGE= JP405147284A

PAT-NO: JP405147284A

DOCUMENT-IDENTIFIER: JP 05147284 A

TITLE: INK JET RECORDING APPARATUS

PUBN-DATE: June 15, 1993

INVENTOR-INFORMATION:

NAME

KIKUMURA, TATSUYA

TSUJI, KIKUNOSUKE

SUGIMORI, MASAO

SATAKE, KENICHI

HORI, SETSUO

ASSIGNEE-INFORMATION:

NAME

MITA IND CO LTD

COUNTRY

N/A

APPL-NO: JP03341998

APPL-DATE: November 30, 1991

INT-CL (IPC): B41J011/48;B41J002/01 ;B41J011/02 ;B41J015/04 ;B41J029/16

US-CL-CURRENT: 347/104,400/605 ,400/611 ,400/625 ,400/636

ABSTRACT:

PURPOSE: To apply printing to both of roll paper and cut paper by simple constitution in an ink jet printer.

CONSTITUTION: A cylindrical platen 11 also used as a roll paper receiving case is arranged in opposed relation to a printing head 12 and a roll paper driving shaft 13 rotating while supporting roll paper RP to deliver the roll paper RP from the opening 18 formed to the peripheral surface of the cylindrical platen 11 is provided in the cylindrical platen 11. Further, cut paper feed guides 5, 6 supplying cut paper CP to the vicinity of the opening 18 of the cylindrical platen 11 and paper feed means 7, 8 feeding the roll paper RP delivered from the opening 18 of the cylindrical platen 11 and the cut paper CP sent from the cut paper feed guides 5, 6 along the peripheral surface opposed to the printing head 12 of the cylindrical platen 11 are provided.

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(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平5-147284

(43)公開日 平成5年(1993)6月15日

(51)Int.Cl. ⁵	識別記号	庁内整理番号	F I	技術表示箇所
B 4 1 J 11/48 2/01 11/02 15/04		9011-2C 9011-2C 8306-2C 8306-2C		
			B 4 1 J 3/ 04 1 0 1 Z	
			審査請求 未請求 請求項の数 1(全 5 頁) 最終頁に続く	

(21)出願番号 特願平3-341998

(22)出願日 平成3年(1991)11月30日

(71)出願人 000006150

三田工業株式会社

大阪府大阪市中央区玉造1丁目2番28号

(72)発明者 菊村 達也

大阪府大阪市中央区玉造1丁目2番28号

三田工業株式会社内

(72)発明者 辻 菊之助

大阪府大阪市中央区玉造1丁目2番28号

三田工業株式会社内

(72)発明者 杉森 正夫

大阪府大阪市中央区玉造1丁目2番28号

三田工業株式会社内

(74)代理人 弁理士 藤本 英夫

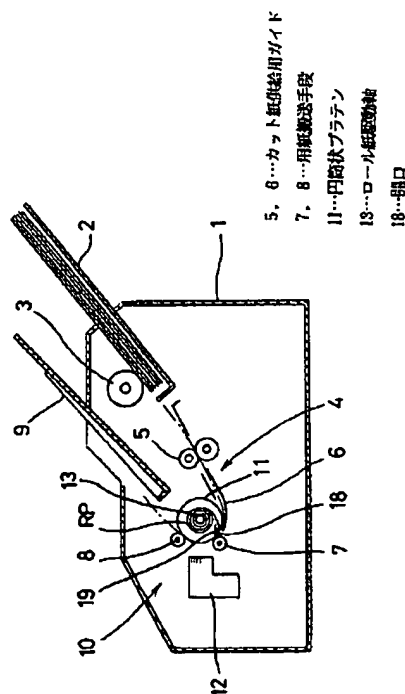
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(54)【発明の名称】 インクジェット記録装置

(57)【要約】

【目的】 インクジェットプリンタにおいて、簡単な構成でロール紙とカット紙の両方に印刷できるようにする。

【構成】 プリントヘッド12に対向させてロール紙収納ケースを兼ねる円筒状プラテン11を配置し、この円筒状プラテン11内にロール紙RPを支持して回転し円筒状プラテン11の周面に形成した開口18からロール紙RPを繰り出すロール紙駆動軸13を設ける。また、円筒状プラテン11の開口18近傍までカット紙CPを供給するカット紙供給用ガイド5、6と、円筒状プラテン11の開口18から繰り出されるロール紙RPおよびカット紙供給用ガイド5、6から送られてくるカット紙CPを円筒状プラテン11のプリントヘッド12に対向する周面に沿うように搬送する用紙搬送手段7、8を設ける。



【特許請求の範囲】

【請求項1】 プリントヘッドに対向させて配置されロール紙収納ケースを兼ねる円筒状プラテンと、この円筒状プラテン内に配置されロール紙を支持して回転し円筒状プラテンの周面に形成した開口からロール紙を繰り出すロール紙駆動軸と、前記円筒状プラテンの開口近傍までカット紙を供給するカット紙供給用ガイドと、前記円筒状プラテンの開口から繰り出されるロール紙および前記カット紙供給用ガイドから送られてくるカット紙を円筒状プラテンの前記プリントヘッドに対向する周面に沿うように搬送する用紙搬送手段とを備えたことを特徴とするインクジェット記録装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、プリントヘッドの微小ノズルからインクを噴射させて、用紙に印刷するインクジェット記録装置に関する。

【0002】

【従来の技術】ロール紙に印刷できる従来のインクジェット記録装置として、プリントヘッドに対向させてロール紙を支持し回転駆動する駆動軸を配置した構成のもの知られている（特開平2-41279号公報）。

【0003】

【発明が解決しようとする課題】しかし、前記インクジェット記録装置の場合、ロール紙外周面とプリントヘッドとの間隔をロール紙の消耗に関係なく一定に保つために、前記駆動軸をばねでプリントヘッド側に付勢して、ロール紙の外周面を常にプリントヘッド前面側に配置した固定部材に押し当てるようにしているので、構成が複雑になるという問題点があった。また、このインクジェット記録装置は、ロール紙専用でありカット紙への印刷には使用できないという問題点もあった。

【0004】上記の従来欠点に鑑み、本発明は、構成が簡単でロール紙とカット紙の両方に印刷できるインクジェット記録装置を提供せんとするものである。

【0005】

【課題を解決するための手段】上記の目的を達成するために、本発明は、プリントヘッドに対向させて配置されロール紙収納ケースを兼ねる円筒状プラテンと、この円筒状プラテン内に配置されロール紙を支持して回転し円筒状プラテンの周面に形成した開口からロール紙を繰り出すロール紙駆動軸と、前記円筒状プラテンの開口近傍までカット紙を供給するカット紙供給用ガイドと、前記円筒状プラテンの開口から繰り出されるロール紙および前記カット紙供給用ガイドから送られてくるカット紙を円筒状プラテンの前記プリントヘッドに対向する周面に沿うように搬送する用紙搬送手段とを備えたことを特徴としている。

【0006】

【作用】上記の構成によれば、ロール紙駆動軸が回転駆

動されると、そのロール紙駆動軸に支持されて円筒状プラテン内に収納されているロール紙が円筒状プラテン周面の開口から繰り出され、用紙搬送手段によってプリントヘッドに対向する円筒状プラテンの周面に沿うように搬送され、この間にプリントヘッドによってロール紙に順次印刷が行われる。

【0007】カット紙の印刷の場合には、例えば繰り出されたロール紙をロール紙駆動軸の逆回転駆動によって円筒状プラテン内に回収した状態のもとで、カット紙供給用ガイドを経て送られてくるカット紙が用紙搬送手段によって円筒状プラテン周面に沿うように搬送され、そのカット紙に順次印刷が行われる。

【0008】

【実施例】以下、本発明の実施例を図面に基いて説明する。図1はこの実施例のインクジェット記録装置の概要を示す断面図である。このインクジェット記録装置はシリアルプリンタであって、プリンタ本体1にはカット紙CPを収容する給紙カセット2が着脱可能に設けられている。この給紙カセット2のカット紙CPは、給紙ローラ3によって用紙搬送路4に供給される。

【0009】上記用紙搬送路4は、供給されてきたカット紙CPを印字部10のプラテンローラ11に搬送するためのレジストローラ5、ガイド板6や、用紙をプラテンローラ11の外周面に沿わせて排紙トレイ9へと排出する搬送ローラ7、8などからなり、カット紙CPは二点鎖線で示す経路を経て搬送される。

【0010】印字部10は、プラテンローラ11や、このプラテンローラ11に対向させて配置されプラテンローラ11の外周面に沿って通過する用紙に微小ノズルからインク滴を噴射して印刷を行うプリントヘッド12などによって構成されている。

【0011】図2はその印刷部10の概要を示す部分破断平面図である。前記プラテンローラ11は摩擦係数の小さい部材からなる中空の円筒形であり、その内部にはロール紙RPをその回転中心で支持して回転駆動するロール紙駆動軸13がプラテンローラ11の駆動軸14と同心状に配置されており、ロール紙駆動軸13および駆動軸14の両端部は両フレーム15、15によって軸支されている。さらにロール紙駆動軸13および駆動軸14の一端部には、クラッチ16を介してギヤ17が軸着され、図示しないステッピングモータなどの駆動源の回転出力が伝達機構を介して上記ギヤ17に伝達される。

【0012】プラテンローラ11の周面の上記プリントヘッド12と対向する部分よりも用紙搬送路4のやや下流側には、図1に示すようにプラテンローラ11内のロール紙RPを繰り出すためのスリット状の開口18が形成されており、この開口18のプラテンローラ11内部側には、ロール紙RPの先端を検出するためのロール紙検出センサ19が配置されている。

【0013】上記搬送ローラ7は、図1に示すようにプ

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ラテンローラ11の開口18よりも用紙搬送路4のやや上流側でプラテンローラ11に接するように配置され、もう一方の搬送ローラ8は、プラテンローラ11のプリントヘッド12と対向する周面部分よりも用紙搬送路4のやや下流側でプラテンローラ11に接するように配置されている。これらの搬送ローラ7、8も、図2に示すように両端部が前記両フレーム15、15によって軸支され、それらの一端部に軸着されたギヤ20、21がロール紙駆動軸13側のギヤ17に噛み合わされている。

【0014】プリントヘッド12は、図2に示すようにプラテンローラ11と平行に配置されたガイドロッド22に沿って摺動するキャリッジ23に固定され、そのキャリッジ23は無端ベルト24の途中に止着されており、無端ベルト24によってプリントヘッド12を左右に往復移動させるように構成されている。

【0015】図3は上記インクジェット記録装置の動作を示す説明図であり、図4はその動作を示すフローチャートである。次に図3および図4を参照して、上記インクジェット記録装置による印刷動作を説明する。図示しないボタン操作により印刷すべき用紙としてロール紙R Pが選択されると、この選択がステップS1で確認され、次のステップS2でロール紙R Pを印刷用紙とする印刷モードがセットされる。

【0016】ついで、ステップS3において、クラッチ16の切換え動作によりプラテンローラ11の駆動軸14がギヤ17から切り離されると共に図示しないブレーキによって固定状態に設定される。ロール紙駆動軸13はギヤ17に接続された状態に保たれる。このとき、プラテンローラ11はその開口18が搬送ローラ7よりも用紙搬送路4のやや下流側にくるように回転位置が設定される。

【0017】この状態のもとで、ステップS4において印字動作が図3で示すように行われる。すなわち、図3(A)に示すようにロール紙R Pの先端がプラテンローラ11の開口18に臨んでいる状態から、駆動源の回転出力がギヤ17、20、21(図2)に伝達され、図3(B)に示すようにロール紙R Pおよび搬送ローラ7、8が間欠同期回転する。その結果、ロール紙R Pが開口18からプラテンローラ11外に繰り出され、搬送ローラ7、8によりプラテンローラ11の外周面に沿って排出トレイ9へと送られる。その搬送に伴ってプリントヘッド12の微小ノズルからインク滴が噴射されロール紙R Pに順次印刷が行われる。

【0018】印字が終了すると、次のステップS5によりこのときの印字モードが確認される。ロール紙R Pの印字モードであると確認されると、ここで全ての動作が終了する。ロール紙R Pには1頁ごとにミシン目が入れてあり、利用者は搬送ローラ8から排紙トレイ9へ排出されてきたロール紙R Pを引っ張ることにより、その印刷頁部分を分離することができる。

【0019】上述したようにロール紙R Pの印字動作が

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終了して、次に図示しないボタン操作により印刷すべき用紙として例えばカット紙C Pが選択されると、この選択がステップS1で確認され、ついでステップS6においてロール紙C Pを印刷用紙とする印刷モードがセットされる。

【0020】次に、ステップS7において図3(C)に示すようにカット紙C Pの印刷が可能な初期状態にリセットされる。すなわち、ギヤ17(図2)を逆回転させることにより、プラテンローラ11の外周面に繰り出されていたロール紙R Pがプラテンローラ11内に回収され、その先端が開口16内まで後退した時点で回収動作が停止される。その停止タイミングは、開口18に設けられたロール紙検出センサ19がロール紙R Pの先端を検出するときの信号に基づき設定される。次いでクラッチ16の切換え動作によりプラテンローラ11の駆動軸14がギヤ15に接続され、プラテンローラ11はそれまでの固定状態から解放される。

【0021】この状態のもとでステップS4による印字動作が行われる。すなわち、給紙カセット2のカット紙C Pが給紙ローラ3の駆動により用紙搬送路4に供給され、さらにレジストローラ5およびガイド板6を経てプラテンローラ11の外周面へと送られる。送られてきたカット紙C Pは、ギヤ17、20、21の回転に伴うプラテンローラ11および搬送ローラ7、8の間欠同期回転によりプリントヘッド12に対向するプラテンローラ11の外周面に沿って排紙トレイ9へと送られる。これに伴って、カット紙C Pに順次印刷が行われる。

【0022】印刷動作が終了すると、ステップS5においてこのときの印字モードが確認される。カット紙C Pの印字モードであると確認されると、ステップS8においてカット紙C Pの排紙動作が行われる。すなわち、プラテンローラ11および搬送ローラ8、8がしばらく回転して印刷済みのカット紙C Pが排紙トレイ9に排出される。

【0023】なお、上記実施例ではロール紙R Pの印字からカット紙C Pの印字に切り換える場合、プラテンローラ11の回転位置を固定したままで、繰り出したロール紙R Pをプラテンローラ11内に回収する場合について示したが、これに限らず例えばプラテンローラ11を逆回転させて、その開口18および繰り出されたロール紙R Pを用紙搬送路4から外れた回転周域に退避させてカット紙C Pの搬送の妨げにならないようにしてもよい。

【0024】また、上記実施例ではシリアルプリンタの場合を説明したが、ラインプリンタにも同様に適用できる。

【0025】

【発明の効果】本発明は、上述した構成より成り、プリントヘッドに対向させて配置されロール紙収納ケースを兼ねる円筒状プラテンと、この円筒状プラテン内に配置されロール紙を支持して回転し円筒状プラテンの周面に

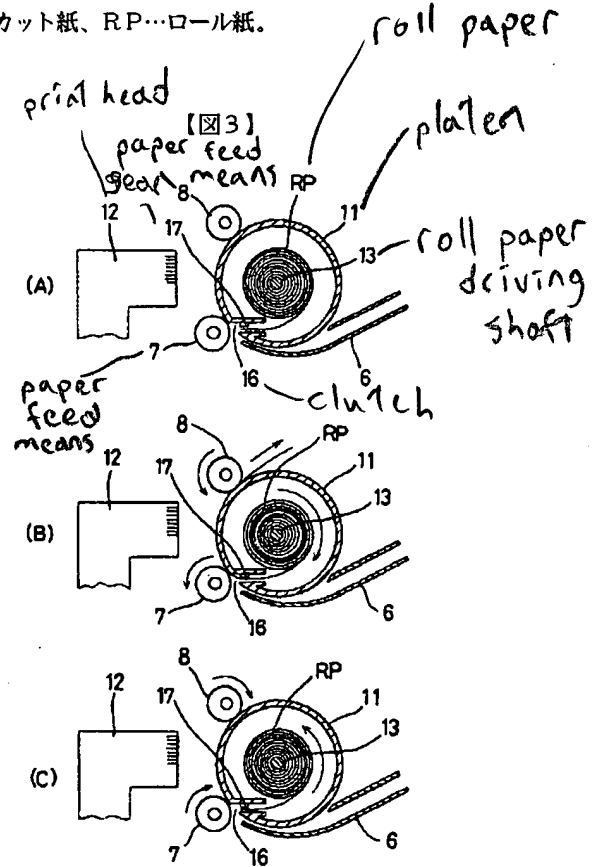
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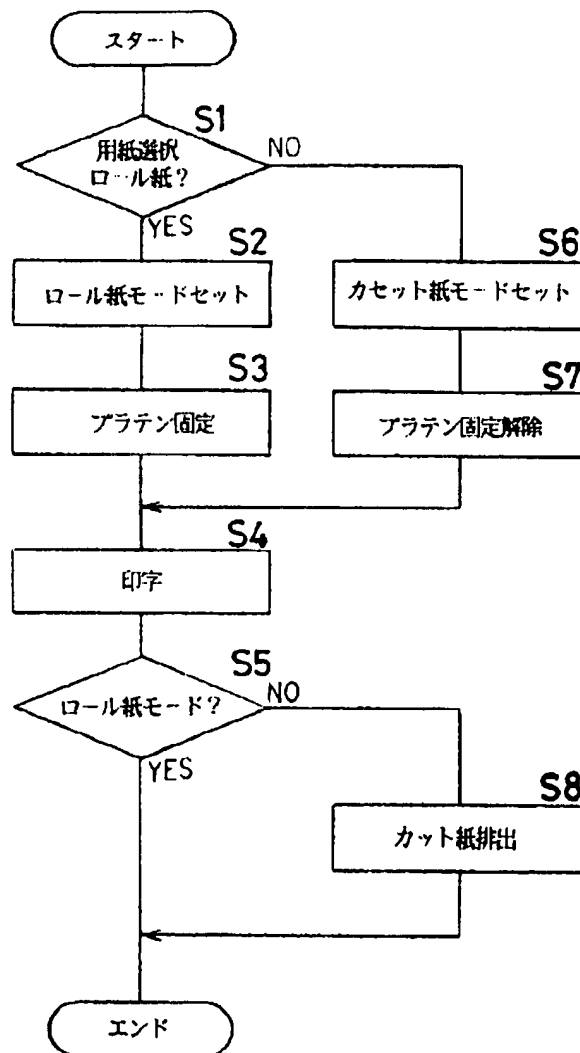
【符号の説明】

10 段、11…円筒状プラテン、13…ロール紙駆動軸、18…開口、CP…カット紙、RP…ロール紙。 5611

【図1】本発明の一実施例であるインクジェット記録装置



【図4】



フロントページの続き

(51)Int. Cl.⁵
B 4 1 J 29/16

識別記号 庁内整理番号
8804-2C

F I

技術表示箇所

(72)発明者 佐武 健一
大阪府大阪市中央区玉造1丁目2番28号
三田工業株式会社内

(72)発明者 堀 節夫
大阪府大阪市中央区玉造1丁目2番28号
三田工業株式会社内

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-147284

(43)Date of publication of application : 15.06.1993

(51)Int.Cl.

B41J 11/48
B41J 2/01
B41J 11/02
B41J 15/04
B41J 29/16

(21)Application number : 03-341998

(71)Applicant : MITA IND CO LTD

(22)Date of filing : 30.11.1991

(72)Inventor : KIKUMURA TATSUYA

TSUJI KIKUNOSUKE

SUGIMORI MASAO

SATAKE KENICHI

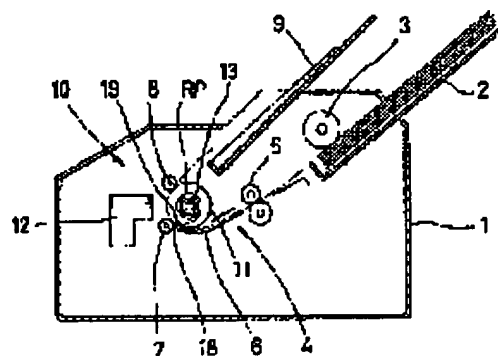
HORI SETSUO

(54) INK JET RECORDING APPARATUS

(57)Abstract:

PURPOSE: To apply printing to both of roll paper and cut paper by simple constitution in an ink jet printer.

CONSTITUTION: A cylindrical platen 11 also used as a roll paper receiving case is arranged in opposed relation to a printing head 12 and a roll paper driving shaft 13 rotating while supporting roll paper RP to deliver the roll paper RP from the opening 18 formed to the peripheral surface of the cylindrical platen 11 is provided in the cylindrical platen 11. Further, cut paper feed guides 5, 6 supplying cut paper CP to the vicinity of the opening 18 of the cylindrical platen 11 and paper feed means 7, 8 feeding the roll paper RP delivered from the opening 18 of the cylindrical platen 11 and the cut paper CP sent from the cut paper feed guides 5, 6 along the peripheral surface opposed to the printing head 12 of the cylindrical platen 11 are provided.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

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CLAIMS

[Claim(s)]

[Claim 1] The ink-jet recording device characterized by providing the following. The cylinder-like platen which is made to counter a print head, is arranged and serves as a roll-sheet receipt case. The roll-sheet driving shaft which lets out a roll sheet from opening which has been arranged in this cylinder-like platen, rotated in support of the roll sheet, and was formed in the peripheral surface of a cylinder-like platen. The guide for cut sheet supply which supplies a cut sheet to near the opening of the aforementioned cylinder-like platen. A form conveyance means to convey the cut sheet sent from the roll sheet and the aforementioned guide for cut sheet supply which it lets out from opening of the aforementioned cylinder-like platen so that the peripheral surface which counters the aforementioned print head of a cylinder-like platen may be met.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention makes ink inject from the minute nozzle of a print head, and relates to the ink-jet recording device printed in a form.

[0002]

[Description of the Prior Art] As a conventional ink-jet recording device which can be printed to a roll sheet, a print head is made to counter and the thing of composition of having arranged the driving shaft which supports a roll sheet and carries out a rotation drive is known (JP,2-41279,A).

[0003]

[Problem(s) to be Solved by the Invention] However, since it was made to press against the holdddown member which energized the aforementioned driving shaft to the print head side by means of a spring, and has always arranged the periphery side of a roll sheet to the front-face side of a print head in order to keep constant the interval of a roll-sheet periphery side and a print head to exhaustion of a roll sheet not related in the case of the aforementioned ink-jet recording device, there was a trouble that composition became complicated. Moreover, this ink-jet recording device is only for roll sheets, and there was also a trouble that it could not be used in printing to a cut sheet.

[0004] In view of the above-mentioned conventional fault, this invention is easy to constitute and uses as an offer plug the ink-jet recording device which can be printed to both a roll sheet and a cut sheet.

[0005]

[Means for Solving the Problem] The cylinder-like platen which this invention is made to counter a print head, is arranged, and serves as a roll-sheet receipt case in order to attain the above-mentioned purpose, The roll-sheet driving shaft which lets out a roll sheet from opening which has been arranged in this cylinder-like platen, rotated in support of the roll sheet, and was formed in the peripheral surface of a cylinder-like platen, The guide for cut sheet supply which supplies a cut sheet to near the opening of the aforementioned cylinder-like platen, It is characterized by having a form conveyance means to convey the cut sheet sent from the roll sheet and the aforementioned guide for cut sheet supply which it lets out from opening of the aforementioned cylinder-like platen so that the peripheral surface which counters the aforementioned print head of a cylinder-like platen may be met.

[0006]

[Function] According to the above-mentioned composition, if the rotation drive of the roll-sheet driving shaft is carried out, the roll sheet which is supported by the roll-sheet driving shaft and contained in the cylinder-like platen will let out from opening of a cylinder-like platen peripheral surface, and it will be conveyed so that the peripheral surface of the cylinder-like platen which counters a print head by the form conveyance means may be met, and printing will be performed one by one to a roll sheet by the print head in the meantime.

[0007] It is conveyed so that the cut sheet which is sent through the guide for cut sheet supply by the basis in the state where the reverse rotation drive of a roll-sheet driving shaft recovered the roll sheet which it let out, for example in the cylinder-like platen in printing of a cut sheet may meet a cylinder-

like platen peripheral surface by the form conveyance means, and printing is performed to the cut sheet one by one.

[0008]

[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 is the cross section showing the outline of the ink-jet recording device of this example. This ink-jet recording device is a serial printer, and the feed cassette 2 which holds cut sheet CP is formed in the main part 1 of a printer removable. Cut sheet CP of this feed cassette 2 is supplied to the form conveyance way 4 with the feed roller 3.

[0009] The above-mentioned form conveyance way 4 consists of the resist roller 5 for conveying supplied cut sheet CP to the platen roller 11 of the printing section 10, a guide plate 6, conveyance rollers 7 and 8 that a form is made for there to be along the periphery side of a platen roller 11, and are discharged to the delivery tray 9, and cut sheet CP is conveyed through the path shown with a two-dot chain line.

[0010] The printing section 10 is constituted by the print head 12 which prints by injecting an ink drop from a minute nozzle in the form which a platen roller 11 and this platen roller 11 are made to counter, and it is arranged, and is passed along the periphery side of a platen roller 11.

[0011] Drawing 2 is the partial fracture plan showing the outline of the printing section 10. The roll-sheet driving shaft 13 which the aforementioned platen roller 11 is the cylindrical shape of the hollow which consists of a member with small coefficient of friction, and carries out a rotation drive in support of roll-sheet RP by the center of rotation in the interior is arranged the shape of a driving shaft 14 and the said heart of a platen roller 11, and the both ends of the roll-sheet driving shaft 13 and a driving shaft 14 are supported to revolve by both the frames 15 and 15. Furthermore, a gear 17 is fixed to revolve by the end section of the roll-sheet driving shaft 13 and a driving shaft 14 through a clutch 16, and the rotation output of driving sources, such as a stepping motor which is not illustrated, is transmitted to the above-mentioned gear 17 through a transfer mechanism.

[0012] Rather than the above-mentioned print head 12 of the peripheral surface of a platen roller 11, and the portion which counters, a little, the opening 18 of the shape of a slit for [of the form conveyance way 4] letting out roll-sheet RP in a platen roller 11 at a downstream, as shown in drawing 1 is formed, and the roll-sheet detection sensor 19 for detecting the nose of cam of roll-sheet RP is arranged at the interior side of platen roller 11 of this opening 18.

[0013] the above-mentioned conveyance roller 7 is shown in drawing 1 -- as -- the opening 18 of a platen roller 11 -- the peripheral surface portion of the form conveyance way 4 which it is arranged so that a platen roller 11 may be touched a little by the upstream, and another conveyance roller 8 counters with the print head 12 of a platen roller 11 -- the form conveyance way 4 -- it is arranged so that a platen roller 11 may be touched a little by the downstream As these conveyance rollers 7 and 8 are also shown in drawing 2 , both ends are supported to revolve by both the aforementioned frames 15 and 15, and the gears 20 and 21 fixed to revolve by those end sections are clenched by the gear 17 by the side of the roll-sheet driving shaft 13.

[0014] A print head 12 is fixed to the carriage 23 which slides along with the guide rod 22 arranged in parallel with a platen roller 11 as shown in drawing 2 , and the carriage 23 is attached firmly in the middle of the endless belt 24, and it is constituted so that right and left may be made to carry out both-way movement of the print head 12 with the endless belt 24.

[0015] Drawing 3 is explanatory drawing showing operation of the above-mentioned ink-jet recording device, and drawing 4 is a flow chart which shows the operation. Next, with reference to drawing 3 and drawing 4 , printing operation by the above-mentioned ink-jet recording device is explained. If roll-sheet RP is chosen as a form which should be printed by button grabbing which is not illustrated, the print mode to which this selection is checked at Step S1, and uses roll-sheet RP as a print sheet at the following step S2 will be set.

[0016] Subsequently, in Step S3, it is set as a fixed state by the brake which is not illustrated while the driving shaft 14 of a platen roller 11 is separated from a gear 17 by change operation of a clutch 16. The roll-sheet driving shaft 13 is maintained at the state where it connected with the gear 17. this time -- a

platen roller 11 -- the opening 18 -- the conveyance roller 7 -- the form conveyance way 4 -- a rotation position is set up so that it may come to a downstream a little

[0017] Under this state, as printing operation shows step S4 by drawing 3, it is carried out. That is, from the state where the nose of cam of roll-sheet RP has attended the opening 18 of a platen roller 11 as shown in drawing 3 (A), the rotation output of a driving source is transmitted to gears 17, 20, and 21 (drawing 2), and as shown in drawing 3 (B), roll-sheet RP and the conveyance rollers 7 and 8 carry out intermittent synchronous rotation. Consequently, roll-sheet RP lets out out of a platen roller 11 from opening 18, and is sent to the ecrisis tray 9 along the periphery side of a platen roller 11 with the conveyance rollers 7 and 8. An ink drop is injected from the minute nozzle of a print head 12 with the conveyance, and printing is performed to roll-sheet RP one by one.

[0018] An end of printing checks the printing mode at this time by the following step S5. If it is checked that it is the printing mode of roll-sheet RP, all operation will be completed here. The perforation is put into roll-sheet RP for every page, and a user can separate the printing page portion by pulling roll-sheet RP discharged from the conveyance roller 8 to the delivery tray 9.

[0019] As mentioned above, printing operation of roll-sheet RP is completed, if for example, cut sheet CP is chosen as a form which should be printed by button grabbing which next is not illustrated, this selection will be checked at Step S1, and the print mode which subsequently uses roll-sheet CP as a print sheet in Step S6 will be set.

[0020] Next, it is reset by the initial state which can print cut sheet CP as Step S7 is shown in drawing 3 (C). That is, by making a gear 17 (drawing 2) rotate reversely, roll-sheet RP which it had let out to the periphery side of a platen roller 11 is collected in a platen roller 11, and when the nose of cam retreats in opening 16, recovery operation is stopped. The halt timing is set up based on a signal in case the roll-sheet detection sensor 19 formed in opening 18 detects the nose of cam of roll-sheet RP. Subsequently, the driving shaft 14 of a platen roller 11 is connected to a gear 15 by change operation of a clutch 16, and a platen roller 11 is released from the fixed state till then.

[0021] Printing operation by step S4 is performed under this state. That is, cut sheet CP of the feed cassette 2 is supplied to the form conveyance way 4 by the drive of the feed roller 3, and is further sent to the periphery side of a platen roller 11 through the resist roller 5 and a guide plate 6. Sent cut sheet CP is sent to the delivery tray 9 along the periphery side of the platen roller 11 which counters a print head 12 by intermittent synchronous rotation of the platen roller 11 accompanying rotation of gears 17, 20, and 21 and the conveyance rollers 7 and 8. In connection with this, printing is performed to cut sheet CP one by one.

[0022] An end of printing operation checks the printing mode at the time of a step S5 smell lever.

JAPANESE

[JP,05-147284,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS OPERATION EXAMPLE DESCRIPTION OF
DRAWINGS DRAWINGS

[Translation done.]

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PRIOR ART

[Description of the Prior Art] As a conventional ink-jet recording device which can be printed to a roll sheet, a print head is made to counter and the thing of composition of having arranged the driving shaft which supports a roll sheet and carries out a rotation drive is known (JP,2-41279,A).

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EFFECT OF THE INVENTION

[Effect of the Invention] The cylinder-like platen which consists of the composition mentioned above in this invention, is made to counter a print head, is arranged, and serves as a roll-sheet receipt case, The roll-sheet driving shaft which lets out a roll sheet from opening which has been arranged in this cylinder-like platen, rotated in support of the roll sheet, and was formed in the peripheral surface of a cylinder-like platen, The guide for cut sheet supply which supplies a cut sheet to near the opening of the aforementioned cylinder-like platen, A paper conveyance means to convey the cut sheet sent from the roll sheet and the aforementioned guide for cut sheet supply which it lets out from opening of the aforementioned cylinder-like platen so that the peripheral surface which counters the aforementioned print head of a cylinder-like platen may be met is established. Therefore, while keeping constant the crevice between a print head and a roll-sheet peripheral surface by easy composition and being able to perform printing to a roll sheet, printing to a cut sheet can also be performed.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since it was made to press against the hold-down member which energized the aforementioned driving shaft to the print head side by means of a spring, and has always arranged the periphery side of a roll sheet to the front-face side of a print head in order to keep constant the interval of a roll-sheet periphery side and a print head to consumption of a roll sheet not related in the case of the aforementioned ink-jet recording device, there was a trouble that composition became complicated. Moreover, this ink-jet recording device is only for roll sheets, and there was also a trouble that it could not be used in printing to a cut sheet.

[0004] In view of the above-mentioned conventional fault, this invention is easy to constitute and uses as an offer plug the ink-jet recording device which can be printed to both a roll sheet and a cut sheet.

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MEANS

[Means for Solving the Problem] this invention is characterized by providing the following, in order to attain the above-mentioned purpose. The cylinder-like platen which is made to counter a print head, is arranged and serves as a roll-sheet receipt case. The roll-sheet driving shaft which lets out a roll sheet from opening which has been arranged in this cylinder-like platen, rotated in support of the roll sheet, and was formed in the peripheral surface of a cylinder-like platen. The guide for cut sheet supply which supplies a cut sheet to near the opening of the aforementioned cylinder-like platen. A form conveyance means to convey the cut sheet sent from the roll sheet and the aforementioned guide for cut sheet supply which it lets out from opening of the aforementioned cylinder-like platen so that the peripheral surface which counters the aforementioned print head of a cylinder-like platen may be met.

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OPERATION

[Function] According to the above-mentioned composition, if the rotation drive of the roll-sheet driving shaft is carried out, the roll sheet which is supported by the roll-sheet driving shaft and contained in the cylinder-like platen will let out from opening of a cylinder-like platen peripheral surface, and it will be conveyed so that the peripheral surface of the cylinder-like platen which counters a print head by the form conveyance means may be met, and printing will be performed one by one to a roll sheet by the print head in the meantime.

[0007] It is conveyed so that the cut sheet which is sent through the guide for cut sheet supply by the basis in the state where the reverse rotation drive of a roll-sheet driving shaft recovered the roll sheet which it let out, for example in the cylinder-like platen in printing of a cut sheet may meet a cylinder-like platen peripheral surface by the form conveyance means, and printing is performed to the cut sheet one by one.

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EXAMPLE

[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 is the cross section showing the outline of the ink-jet recording device of this example. This ink-jet recording device is a serial printer, and the feed cassette 2 which holds cut sheet CP is formed in the main part 1 of a printer removable. Cut sheet CP of this feed cassette 2 is supplied to the form conveyance way 4 with the feed roller 3.

[0009] The above-mentioned form conveyance way 4 consists of the resist roller 5 for conveying supplied cut sheet CP to the platen roller 11 of the printing section 10, a guide plate 6, conveyance rollers 7 and 8 that a form is made for there to be along the periphery side of a platen roller 11, and are discharged to the delivery tray 9, and cut sheet CP is conveyed through the path shown with a two-dot chain line.

[0010] The printing section 10 is constituted by the print head 12 which prints by injecting an ink drop from a minute nozzle in the form which a platen roller 11 and this platen roller 11 are made to counter, and it is arranged, and is passed along the periphery side of a platen roller 11.

[0011] Drawing 2 is the partial fracture plan showing the outline of the printing section 10. The roll-sheet driving shaft 13 which the aforementioned platen roller 11 is the cylindrical shape of the hollow which consists of a member with small coefficient of friction, and carries out a rotation drive in support of roll-sheet RP by the center of rotation in the interior is arranged the shape of a driving shaft 14 and the said heart of a platen roller 11, and the both ends of the roll-sheet driving shaft 13 and a driving shaft 14 are supported to revolve by both the frames 15 and 15. Furthermore, a gear 17 is fixed to revolve by the end section of the roll-sheet driving shaft 13 and a driving shaft 14 through a clutch 16, and the rotation output of driving sources, such as a stepping motor which is not illustrated, is transmitted to the above-mentioned gear 17 through a transfer mechanism.

[0012] Rather than the above-mentioned print head 12 of the peripheral surface of a platen roller 11, and the portion which counters, a little, the opening 18 of the shape of a slit for [of the form conveyance way 4] letting out roll-sheet RP in a platen roller 11 at a downstream, as shown in drawing 1 is formed, and the roll-sheet detection sensor 19 for detecting the nose of cam of roll-sheet RP is arranged at the interior side of platen roller 11 of this opening 18.

[0013] the above-mentioned conveyance roller 7 is shown in drawing 1 -- as -- the opening 18 of a platen roller 11 -- the peripheral surface portion of the form conveyance way 4 which it is arranged so that a platen roller 11 may be touched a little by the upstream, and another conveyance roller 8 counters with the print head 12 of a platen roller 11 -- the form conveyance way 4 -- it is arranged so that a platen roller 11 may be touched a little by the downstream As these conveyance rollers 7 and 8 are also shown in drawing 2 , both ends are supported to revolve by both the aforementioned frames 15 and 15, and the gears 20 and 21 fixed to revolve by those end sections are clenched by the gear 17 by the side of the roll-sheet driving shaft 13.

[0014] A print head 12 is fixed to the carriage 23 which slides along with the guide rod 22 arranged in parallel with a platen roller 11 as shown in drawing 2 , and the carriage 23 is attached firmly in the middle of the endless belt 24, and it is constituted so that right and left may be made to carry out both-

way movement of the print head 12 with the endless belt 24.

[0015] Drawing 3 is explanatory drawing showing operation of the above-mentioned ink-jet recording device, and drawing 4 is a flow chart which shows the operation. Next, with reference to drawing 3 and drawing 4, printing operation by the above-mentioned ink-jet recording device is explained. If roll-sheet RP is chosen as a form which should be printed by button grabbing which is not illustrated, the print mode to which this selection is checked at Step S1, and uses roll-sheet RP as a print sheet at the following step S2 will be set.

[0016] Subsequently, in Step S3, it is set as a fixed state by the brake which is not illustrated while the driving shaft 14 of a platen roller 11 is separated from a gear 17 by change operation of a clutch 16. The roll-sheet driving shaft 13 is maintained at the state where it connected with the gear 17. this time -- a platen roller 11 -- the opening 18 -- the conveyance roller 7 -- the form conveyance way 4 -- a rotation position is set up so that it may come to a downstream a little

[0017] Under this state, as printing operation shows step S4 by drawing 3, it is carried out. That is, from the state where the nose of cam of roll-sheet RP has attended the opening 18 of a platen roller 11 as shown in drawing 3 (A), the rotation output of a driving source is transmitted to gears 17, 20, and 21 (drawing 2), and as shown in drawing 3 (B), roll-sheet RP and the conveyance rollers 7 and 8 carry out intermittent synchronous rotation. Consequently, roll-sheet RP lets out out of a platen roller 11 from opening 18, and is sent to the eccrisis tray 9 along the periphery side of a platen roller 11 with the conveyance rollers 7 and 8. An ink drop is injected from the minute nozzle of a print head 12 with the conveyance, and printing is performed to roll-sheet RP one by one.

[0018] An end of printing checks the printing mode at this time by the following step S5. If it is checked that it is the printing mode of roll-sheet RP, all operation will be completed here. The perforation is put into roll-sheet RP for every page, and a user can separate the printing page portion by pulling roll-sheet RP discharged from the conveyance roller 8 to the delivery tray 9.

[0019] As mentioned above, printing operation of roll-sheet RP is completed, if for example, cut sheet CP is chosen as a form which should be printed by button grabbing which next is not illustrated, this selection will be checked at Step S1, and the print mode which subsequently uses roll-sheet CP as a print sheet in Step S6 will be set.

[0020] Next, it is reset by the initial state which can print cut sheet CP as Step S7 is shown in drawing 3 (C). That is, by making a gear 17 (drawing 2) rotate reversely, roll-sheet RP which it had let out to the periphery side of a platen roller 11 is collected in a platen roller 11, and when the nose of cam retreats in opening 16, recovery operation is stopped. The halt timing is set up based on a signal in case the roll-sheet detection sensor 19 formed in opening 18 detects the nose of cam of roll-sheet RP. Subsequently, the driving shaft 14 of a platen roller 11 is connected to a gear 15 by change operation of a clutch 16, and a platen roller 11 is released from the fixed state till then.

[0021] Printing operation by step S4 is performed under this state. That is, cut sheet CP of the feed cassette 2 is supplied to the form conveyance way 4 by the drive of the feed roller 3, and is further sent to the periphery side of a platen roller 11 through the resist roller 5 and a guide plate 6. Sent cut sheet CP is sent to the delivery tray 9 along the periphery side of the platen roller 11 which counters a print head 12 by intermittent synchronous rotation of the platen roller 11 accompanying rotation of gears 17, 20, and 21 and the conveyance rollers 7 and 8. In connection with this, printing is performed to cut sheet CP one by one.

[0022]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the cross section showing the outline of the ink-jet recording device which is one example of this invention.

[Drawing 2] It is the partial fracture plan showing the printing section of the ink JIETO recording device.

[Drawing 3] It is explanatory drawing showing operation of the ink-jet recording device.

[Drawing 4] It is the flow chart which shows printing operation of the ink-jet recording device.

[Description of Notations]

5 6 [-- A cylinder-like platen, 13 / -- A roll-sheet driving shaft, 18 / -- Opening, CP / -- A cut sheet, RP / -- Roll sheet.] -- 7 The guide for cut sheet supply, 8 -- A form conveyance means, 11

[Translation done.]

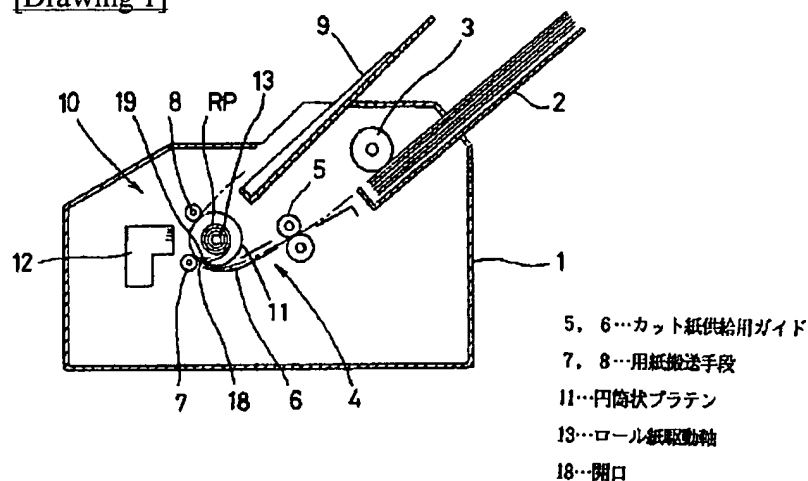
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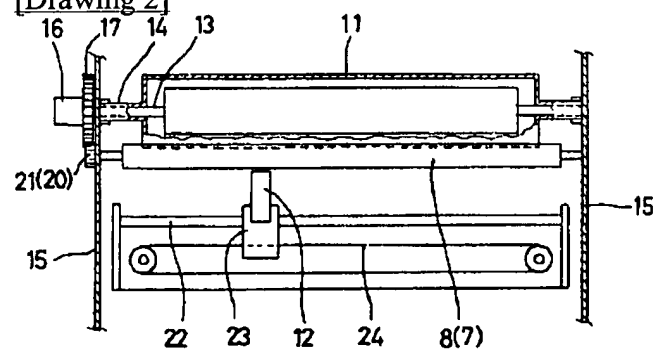
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DRAWINGS

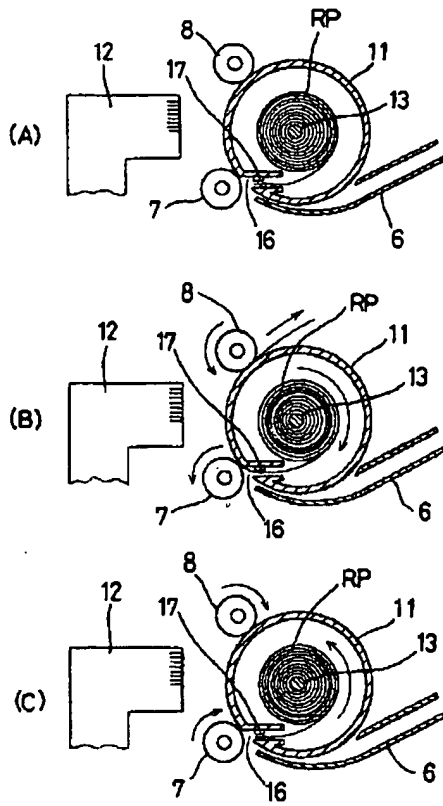
[Drawing 1]



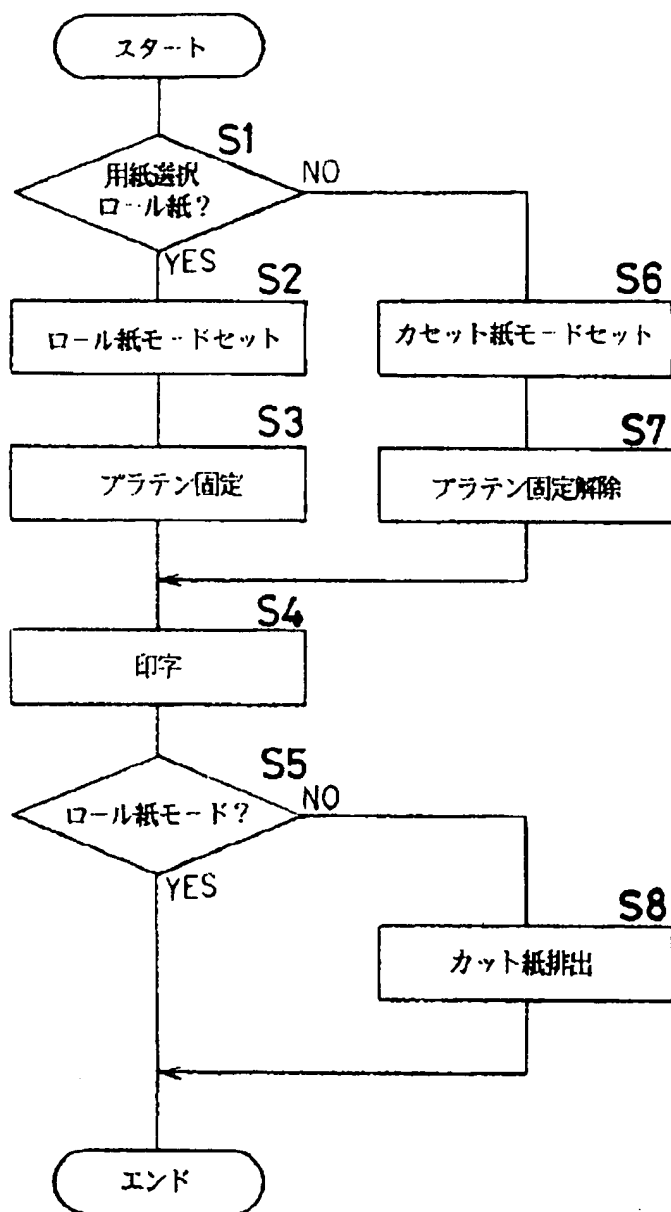
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]